

FINAL

## HUNTERS POINT SHIPYARD PROJECT

### Standard Operating Procedure

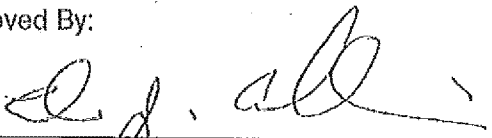
### GAMMA SCREENING OF TRUCKS USING PORTABLE SURVEY INSTRUMENTATION

HPO-Tt-026

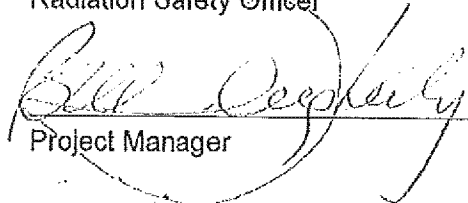
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Revision 2

Approved By:

  
\_\_\_\_\_  
Radiation Safety Officer

9/22/11  
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Date

  
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**REVISION HISTORY**

<i>Revision (Date)</i>	<i>Rev. No</i>	<i>Prepared By</i>	<i>Description of Changes</i>	<i>Affected Pages</i>
May 26, 2005	0	Rick Garcia	Issued Final	All
August 24, 2005	1	Rick Garcia	Clarified steps to follow when truck fails to gain portal monitor clearance.	4, 6-7
September 21, 2011	2	Adam Berry	Added steps to follow when contractor load fails to gain hand scan clearance. Added steps for collection of backgrounds based upon material types.	All

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## 1.0 PURPOSE

The purpose of this procedure is to provide guidelines for performing gamma radiation screening, using hand-held equipment, of trucks loaded with non-radiologically contaminated soils and debris leaving the Hunters Point Naval Shipyard.

## 2.0 SCOPE

This procedure describes the appropriate methods for performing gamma radiation screening of all HPNS contractor trucks loaded with non-radiologically contaminated soils and debris that will be transported to recycling centers, landfills, and other licensed disposal facilities, using hand-held equipment. This screening is conducted as required by the Base-wide Radiological Work Plan in order to verify radiologically contaminated soils and debris do not leave HPNS unless manifested for disposal as Low Level Radioactive Waste. Hand-held surveys are expected to be performed when the truck portal monitor is inoperable or in place of portal monitor surveys for trucks. HPO-Tt-021, *Gamma Screening of Trucks Using the Stationary Portal Monitor* details the usage of the truck portal monitor.

## 3.0 MAINTENANCE

The Tetra Tech EC, Inc. (TtEC) Radiation Safety Officer (RSO) is designated the procedure owner and is responsible for updating this procedure. Approval authority rests with the Project Manager.

## 4.0 RESPONSIBILITIES

**Construction Manager** – The Construction Manager shall be responsible for coordinating the disposition of any load rejected as part of a hand survey. The Construction Manager shall instruct the driver as to where and how to remove the load, with the concurrence of the RSOR, so that further radiological investigation can be performed.

**Radiation Safety Officer** – The Radiation Safety Officer (RSO) shall be responsible for maintaining this procedure up-to-date. The RSO shall periodically review adherence to the requirements of this procedure and ensure that personnel performing the requirements of this procedure are qualified to implement this procedure by training and experience. The RSO is responsible for notifying RASO of any load that is rejected as part of a hand survey.

**Radiation Safety Officer Representative** – The RSOR shall ensure that the personnel performing the work, as called out in this procedure, are adhering to the requirements of this procedure. The RSOR will review and approve the documentation generated by

the use of this procedure. The RSOR is responsible for notifying the contractor/waste generator, and the RSO

**Radiological Task Supervisor** – The Radiological Task Supervisor (RTS) shall be responsible for assisting the RSOR in the assignment of personnel that will perform the tasks required by this procedure. The RTS is responsible for ensuring that the Radiological Control Technicians (RCTs) implement and use this procedure. The RTS will ensure that personnel under their cognizance observe proper precautions when using this procedure.

**Radiological Control Technicians** – The RCTs shall be responsible for performing the duties as specified herein and generating documentation as required under this procedure. The RCTs shall adhere to all other referenced procedures.

**Waste Generator** – The party/parties responsible for producing waste materials at HPS. For the purposes of this SOP, there are typically three types of waste generators; 1) TtEC radiologically surveyed materials cleared for off-site disposal; 2) wastes generated and cleared for off-site disposal by other radiological contractors; 3) wastes generated from non-radiologically impacted sites.

Note: HPNS may have several subcontractors performing waste generating work during the same time period.

## 5.0 DEFINITIONS AND ABBREVIATIONS

None.

## 6.0 PROCEDURE DETAILS

### 6.1 GENERAL

Hand-held gamma instruments used to survey truck loads should be operated in accordance with the requirements of HPO-Tt-007, *Preparation of Portable Radiation and Contamination Survey Meters and Instruments for Field Use* and any applicable requirements from work-specific documents. Surveys should be performed in an area that is convenient to the workplace traffic flow. The area should be sufficiently isolated from any potential sources of radiation and allow the technician to obtain easy access to all sides of the vehicle. It is anticipated that when hand surveys are necessary, they will be conducted adjacent to the location where the portal monitor has been installed; however, an alternate location may be used.

**NOTE:** If material was removed from a truck due to elevated measurements, the truck tires shall be surveyed for contamination in accordance with SOP HPO-Tt-006 *Radiation and Contamination Surveys*.

## 6.2 PROCEDURE PROCESS

When using portable survey instruments for gamma screening surveys of trucks loaded with soils and debris, a Ludlum Model 2350-1, or equivalent survey meter with an attached Ludlum Model 44-10 2-inch by 2-inch sodium iodide (NaI) detector or equivalent should be used.

The following steps will be used for truck surveys:

1. Turn the instrument on.
2. Ensure that the instrument is set to generate audio output and that the volume of the audible response is set to a level easily heard by the individual performing the survey.
3. If the instrument has a variable response time, ensure that a fast (typically 4-second) response time is used.
4. In an area adjacent to where the trucks are being screened and known to be free of radioactive material, establish a background count rate and record it on the Radiological Truck Survey Form for Portable Instruments (Attachment 1). If multiple surveys are to be performed in a single area, then the background only needs to be established once for that area.
5. The end of the detector should be held approximately 4 inches from the surface of the truck containing the load when performing surveys.

**NOTE:** For optimum detection sensitivity, changes in the instrument response are monitored via the audible output, rather than noting fluctuations in the analog or digital meter reading.

6. Move the detector over the surface of the truck or containers in a serpentine pattern at a rate of approximately 0.5 meter per second (m/sec) covering 100 percent of the surface of the sides, the undercarriage, and the rear portion of the truck where the load is contained. Extra scrutiny should be used for any areas that result in significant increase in the audible signal of the meter. For maximum readings as specified on Attachment 1, the technician performing the survey will use their experience and judgment to take a meter level reading at the point of greatest audio response for the given side/area being surveyed.
7. When taking a reading for a maximum count-rate on a given side/area, read the meter after sufficient response time has elapsed (i.e., the meter needle is relatively stable and the audible count rate is relatively stable). If the meter is used for an extended period of time, check the battery condition periodically to ensure proper operation.

8. If radiation levels above 10,000 cpm are identified, the RSOR, RSO and Radiological Affairs Support Office (RASO) will be notified. Document the survey results on the appropriate survey form (Attachment 1). Inform the truck driver that the load is not releasable and follow the steps in Section 6.3 below.

### 6.3 PROTOCOL FOR TRUCKS FAILING HAND HELD SURVEY CLEARANCE

When a truck load exhibits radiation levels above 10,000 cpm during the survey (failed load), the truck will not be released off-site. The TtEC RSOR shall be contacted immediately and apprised of the situation. The procedures for management of a failed load for the three types of waste generators are:

- A failed load generated by another radiological contractor will be held until the waste generator can be notified and can escort the load back to a designated area within the radiological contractor's control.
- All failed loads generated from non-radiologically impacted site that fails the hand-held survey clearance shall follow the procedures described in section 6.4.
- A failed load of TtEC radiologically surveyed wastes.

The following steps shall then be taken in response to a failed load of TtEC radiologically surveyed wastes that does not receive hand held survey clearance:

1. Instruct the truck driver to report to a designated location to have the material removed from the truck pending further characterization and investigations. As authorized by the Construction Manager, in consultation with the RSOR, material shall be placed on a visqueen liner. When removing material, care should be taken to minimize the potential of spreading potentially contaminated material, including the use of an area for dumping that will not be adversely affected by the dumping of potentially contaminated material.
2. Rejected truckload piles must be kept segregated until the pile has been surveyed, and the results have been reviewed by the RSOR, with concurrence from RASO.
3. For trucks dumping a failed load in a radiologically impacted area, the tires of the empty truck shall be scanned upon exiting the impacted area in accordance with SOP HPO-Tt-006 *Radiation and Contamination Surveys* and the empty truck will be rerun through the portal monitor per HPO-Tt-021, *Gamma Screening of Trucks Using the Stationary Portal Monitor*.
4. The truckload pile will be rescanned by hand scan. The pile shall be spread into a 6" laydown and a hand survey shall be conducted. Any radioactive sources located during the rescan of a rejected truckload pile require notification to be given to the RSOR, who will notify the RSO. The RSO will notify the RASO. Pile disposition will be determined by the RSO or designee with RASO concurrence.

5. If no sources are found, any areas exhibiting gamma radiation levels exceeding 9,000 cpm will be placed directly into an LLRW waste bin and a soil sample of the material shall be collected for analysis by the on-site laboratory. The remaining stockpile can either be reloaded and run through the portal monitor again or aggregated with an existing clean stockpile.

6.

#### 6.4 PROTOCOL FOR TRUCKS BEARING LOADS FROM RADIOLOGICALLY NON-IMPACTED AREAS FAILING HAND HELD SURVEY CLEARANCE

The following steps shall then be taken in response to a truck bearing loads from non-radiologically impacted areas that does not receive hand held survey clearance:

1. Instruct the truck driver to report to a location designated by the TtEC Construction Manager to have the material removed from the truck pending further characterization and investigations. As directed by the TtEC Construction Manager, in consultation with the RSOR, material shall be placed on a visqueen liner. When removing material, care should be taken to minimize the potential of spreading potentially contaminated material, including the use of an area for dumping that will not be adversely affected by the dumping of potentially contaminated material.
2. Notify the Project Manager and the RSOR who will notify the RSO. The RSO will notify RASO. The Project Manager will notify the BRAC RPM. Rejected truckload piles shall be kept segregated until direction has been provided by RASO.
3. For trucks dumping in a radiologically impacted area, the tires of the empty truck shall be scanned upon exiting the impacted area in accordance with SOP HPO-Tt-006 *Radiation and Contamination Surveys* and the empty truck will be rerun through the portal monitor per HPO-Tt-021, *Gamma Screening of Trucks Using the Stationary Portal Monitor*.

## 7.0 RECORDS

A series of Radiological Survey Reports will be generated and retained in the project files as a result of using this procedure. The Radiological Truck Survey Form for Portable Instruments is included as Attachment 1. Multiple entries can be made on the same survey form for trucks that do not exhibit elevated levels of radiation. Trucks identified as having elevated levels of radiation present will be documented on separate survey forms.

## 8.0 REFERENCES

<i>Number</i>	<i>Title</i>
HPO-Tt-006	<i>Radiation and Contamination Surveys</i>
HPO-Tt-007	<i>Preparation of Portable Radiation and Contamination Survey Meters and Instruments for Field Use</i>
HPO-Tt-021	<i>Gamma Screening of Trucks Using the Stationary Portal Monitor</i>
N/A	<i>Base-wide Radiological Work Plan</i>

## 9.0 ATTACHMENTS

The following form is attached to this procedure:

Attachment 1, Radiological Truck Survey Form for Portable Instruments

Gamma Screening of Trucks Using  
Portable Survey Instruments

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**ATTACHMENT 1  
RADIOLOGICAL TRUCK SURVEY FORM  
FOR PORTABLE INSTRUMENTS**

Date:	Time:	Truck Identification (i.e. tag number):
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Purpose of Survey:  
(Include load origin)

**INSTRUMENTS USED**

Model Number	Serial Number	Calibration Due Date	Background
1.			
2.			
3.			

Item Or Location	Count Rate Gross CPM	Distance or location
1. Max Reading on the sides of the vehicle		4"
2. Max Reading on the underside of the vehicle		4"
3. Max Reading on the rear of the vehicle		4"
4.		
5.		
6.		
7.		
8.		

Sketch/Diagram (optional):

Remarks:

Disposition (Released/Returned):

Surveyor (Initials):	Reviewed by (signature):	Date:
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